

X.—On the Habits of the Amphictenidæ.

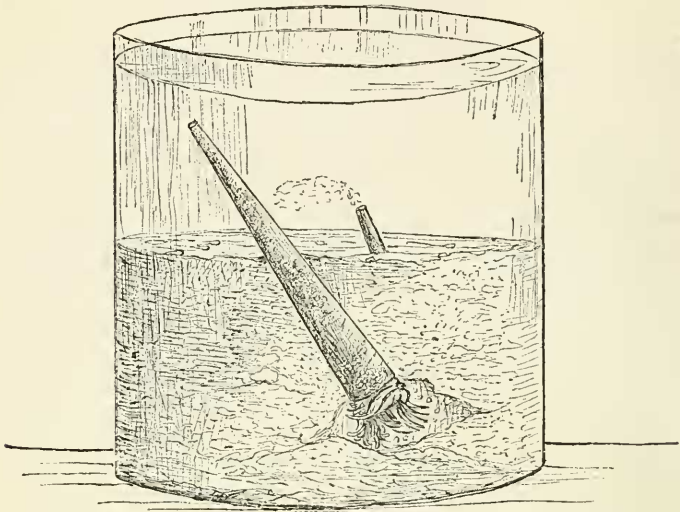
By ARNOLD T. WATSON.

ALTHOUGH the marine Annelids of this group are well known as the skilful architects of tapering cylindrical tubes of fine sand, there appears to be a difference of opinion amongst naturalists as to their mode of life; and it may therefore be of interest to record my own observations. Some authorities, for instance, speak of the smaller end of the tube as found uppermost, projecting from the sand, which is doubtless, as we shall see, its normal position. Others, however (Pallas amongst them), describe this position as reversed, the small end buried and the wider one, which is occupied by the animal's head, exposed, or, at all events, close to the surface. This at first sight does not seem unnatural; but when we understand the object of the comb-like head-bristles, whose function, so far as I am aware, has not previously been explained, the vertical position, with the wide end exposed, is seen to be a most disadvantageous one, and, excepting under accidental or occasional circumstances, must be contrary to the habit of the worm.

I have at different times had several specimens of *Pectinaria* or *Lagis* under observation, and in all cases, when left undisturbed, the worms buried themselves more or less completely in the sand, entering it by digging with their combs (as with a fork), and making a passage through which the wide portion of the tube first passed, followed by the narrower part, the extremity of which was frequently left projecting from the sand—the refuse from the animal being expelled through the small end of the tube, which is usually inclined to the surface of the sand, the small end uppermost. As these worms are great travellers, the position varies somewhat, and the tube may occasionally assume the horizontal or even the vertical position; but in all cases the large end is the advancing one. The head-bristles or “golden combs” are used not only for the purpose of digging, but also probably for sifting the sand, thus enabling the animal to select food and suitable material for building. This is evident from the eager way in which the tentacles explore the fresh ground laid open in the cavity formed by each “toss” of the animal's head. The digging is continuous throughout the day, and it is therefore probable that the worm does not, as at present supposed, confine its building operations to the night-time.

The accompanying sketch shows the creature, natural size, partially submerged in the sand and working close against

the side of a glass vessel ; further off another is ejecting waste material from the narrow end of its tube.



Whether each tube is the lifework of its tenant, or the tubes are shed from time to time, as has been suggested, is an open question ; but I am strongly inclined to the former view, for the following reasons :—

- (1) Their construction is, as one would naturally expect of such beautiful workmanship, very slow, so far as I have been able to judge.
- (2) In many tubes the small end is so minute that it was evidently formed when the animal was *very much* younger.
- (3) The tube gradually increases in diameter towards the mouth or growing edge (as in the tubes of other annelids and shells of some mollusks), so that there would appear to be no necessity and but little advantage in shedding the tube ; while, on the other hand, there would be, unless we assume a complicated method of change, the great disadvantage of a lengthened exposure of the delicate helpless body of the worm. The fact mentioned by Prof. M'Intosh in a paper recently contributed to the 'Annals and Magazine of Natural History'*, viz. that "the smaller end of the tube has grains considerably finer than the wider upper end," would also appear to support my view.

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* *Vide* ser. 6, vol. xiii. p. 14.